

CONTINUOUS DECK POUR FOR PRESTRESSED BEAM SUPERSTRUCTURES

Reference: IDM 404-2.06(02) Transverse Construction Joint

The Engineer of Record, EOR, is responsible for review and approval of Contractor submitted deck pour sequences, per the [LPA & State Shop Drawing & Falsework Review Procedure](#). For prestressed beam superstructures, if the Contractor's proposed sequence combines individual pours from the contract plans or proposes to pour the deck continuously in a single pour, the EOR should use the [INDOT Continuous Bridge Deck Pour Sequence Review Spreadsheet](#) to evaluate the proposed pour sequence. The acceptance criteria shown on the spreadsheet should be used as the EOR's primary basis for approving or rejecting a pour sequence post-letting and setting a minimum pour rate for a continuous pour pre-letting, if deemed possible by the spreadsheet.

Multi-span prestressed beam superstructures are simple spans prior to the deck and pier diaphragms being constructed. Continuity between the spans is established once the deck and pier diaphragms have cured and are able to resist the applied loads. During the deck pour, the beams are loaded with the plastic deck concrete which causes the beams to deflect downward. The deflections and beam end rotations are able to occur in the simple span configuration provided the concrete remains plastic at the piers. However, if the concrete in the pier diaphragms or deck begins to set as the subsequent span is being loaded with plastic concrete, excessive cracking may develop in the negative moment region. Therefore, IDM 404-2.06(02) suggests that the pier diaphragms and a 5'-0" wide portion of deck directly above the piers be poured after all the positive moment regions are constructed, thereby eliminating the risk of applying tension to setting concrete.

Constructing the pier diaphragms and portions of the deck above the piers separately from the remainder of the deck also presents some disadvantages. Transverse construction joints are required at each side of the pier, which creates potential locations for chloride ingress. Separate deck pours also have the potential to reduce ride quality due to the risk of slope breaks or abrupt surface changes between pours. The most common disadvantage of requiring multiple deck pours is the increased construction time and cost. For these reasons, INDOT's preference is to allow continuous deck pours for prestressed beam superstructures when the criteria described in this Bridge Design Aid is satisfied.

An example application using the spreadsheet with the Bridge Sample Plans for a pre-letting situation is attached.